Amendments to the Claims:

Claims 1-53 (Cancelled).

54. (New) A power-assisted bicycle operable to provide an assisting power in accordance with a pedaling power acting on a drive shaft, comprising:

a ratchet gear for transmitting a one-way rotation of said drive shaft to a sprocket, said ratchet gear including:

a tooth part having a plurality of ratchet teeth; and

a piece part having a plurality of ratchet pieces arranged such that said ratchet pieces engage said ratchet teeth during the one-way rotation and disengage said ratchet teeth during rotation in a direction opposite the one-way rotation, one of said tooth part and said piece part being mounted on said drive shaft via a rotation-prevention system operable to prevent rotation of said one of said tooth part and said piece part relative to said drive shaft and operable to allow sliding axial movement of said one of said tooth part and said piece part relative to said drive shaft, the other of said tooth part and said piece part being connected to said sprocket, said tooth part and said piece part being arranged such that a position of said piece part changes relative to a position of said tooth part according to a pedaling force in a direction of the one-way rotation;

a detection system for detecting a physical parameter that varies due to the change of the position of said piece part relative to the position of said tooth part; and

a control system for controlling the assisting power based at least in part on the physical parameter detected by said detection system.

55. (New) The power-assisted bicycle of claim 54, wherein said ratchet gear is operable to expand and contract along an axial direction of said drive shaft based on the pedaling force.

56. (New) The power-assisted bicycle of claim 54, wherein said ratchet gear is operable to elastically return to an original shape after the change of the position of said piece part relative to the position of said tooth part.

57. (New) The power-assisted bicycle of claim 56, wherein said ratchet gear further includes an elastic member for resisting the change of the position of said piece part relative to the position of said tooth part and for at least assisting with the elastic return to the original shape.

58. (New) The power-assisted bicycle of claim 57, wherein said detection system is operable to detect stress deformation of said elastic member as the physical parameter.

59. (New) The power-assisted bicycle of claim 56, wherein said ratchet gear further includes an elastic member having a generally flat form, having a height smaller than a latitudinal width, and being arranged so a height direction of said elastic member is parallel to a direction of the change of the position of said piece part relative to the position of said tooth part.

60. (New) The power-assisted bicycle of claim 54, wherein said detection system is operable to detect a position of said piece part relative to a body frame as the physical parameter.

61. (New) The power-assisted bicycle of claim 54, wherein said detection system is operable to detect a clearance between said piece part and said tooth part as the physical parameter.

62. (New) The power-assisted bicycle of claim 54, wherein said detection system is operable to detect a variation in a resistance pressure applied against the change of the position of said piece part relative to the position of said tooth part as the physical parameter.

63. (New) The power-assisted bicycle of claim 54, wherein:

each of said plurality of ratchet teeth has a sharply-sloping face and a gradually-sloping face arranged in an alternating manner on an engagement face of said tooth part in a peripheral direction thereof;

each of said ratchet pieces is mounted on said piece part so as to be operable to form various angles with an engagement face of said piece part; and

said tooth part and said piece part being arranged such that each of said ratchet pieces engages a corresponding sharply-sloping face of one of said ratchet teeth when said drive shaft is rotated in the direction of the one-way rotation, and each of said ratchet pieces abuts against a corresponding gradually-sloping face of one of said ratchet teeth when said drive shaft is rotated in a direction opposite to the direction of the one-way rotation.

64. (New) The power-assisted bicycle of claim 54, further comprising an elastic unit, wherein said one of said tooth part and said piece part mounted on said drive shaft via a rotation-prevention system is supported such that said elastic unit is operable to abut a rear face of said one of said tooth part and said piece part opposite an engagement face of said one of said tooth part and said piece part.

65. (New) The power-assisted bicycle of claim 64, wherein said detection system comprises a deformation detection sensor for detecting a stress deformation of said elastic unit.

66. (New) The power-assisted bicycle of claim 64, wherein said detection system comprises a position sensor for detecting a clearance between said tooth part and said piece part.

67. (New) The power-assisted bicycle of claim 64, wherein said elastic unit comprises a disc spring.

68. (New) The power-assisted bicycle of claim 67, wherein said detection system comprises a plurality of strain gauges mounted on said disc spring.

69. (New) The power-assisted bicycle of claim 68, wherein said control system is operable to determine a pedaling force for controlling the assisting power by subjecting signals from said plurality of strain gauges to at least an addition process.

70. (New) The power-assisted bicycle of claim 68, wherein said plurality of strain gauges are mounted on a surface of said disc spring so as to be equally spaced apart.

71. (New) The power-assisted bicycle of claim 64, further comprising an offset elastic member for biasing said one of said tooth part and said piece part mounted on said drive shaft so as to create a clearance between said rear face and said elastic unit when the pedaling force is lower than a predetermined value.

72. (New) The power-assisted bicycle of claim 64, further comprising a supporting member mounted on said drive shaft, said elastic unit being supported within said supporting member so as to be rotatable and axially slidable.

73. (New) The power-assisted bicycle of claim 72, wherein said supporting member is connected to said sprocket.

74. (New) The power-assisted bicycle of claim 72, wherein said supporting member comprises a hollow cylindrical member having an inner bottom face, said hollow cylindrical member supporting said elastic unit at said inner bottom face.

75. (New) The power-assisted bicycle of claim 64, wherein said rear face has a bearing, said bearing comprising one of a loading bearing and a sliding bearing.

76. (New) The power-assisted bicycle of claim 75, wherein said bearing includes a plurality of steel balls inserted rotatably into a circular groove formed in said rear face.

77. (New) The power-assisted bicycle of claim 64, wherein said rotation-prevention system comprises a ball spline.

78. (New) The power-assisted bicycle of claim 64, wherein said one of said tooth part and said piece part mounted on said drive shaft has a bore for accommodating said drive shaft.

79. (New) The power-assisted bicycle of claim 78, wherein said rotation-prevention system comprises a row of first grooves formed in an inner wall of said bore and extending in an axial direction, a row of second grooves formed in said drive shaft opposite said first grooves and extending in the axial direction, and steel balls accommodated between said first grooves and said second grooves.

80. (New) The power-assisted bicycle of claim 78, wherein said rotation-prevention system comprises a row of first grooves formed in an inner wall of said bore and extending in an axial direction, a row of second grooves formed in said drive shaft opposite said first grooves and extending in the axial direction, and plates accommodated between said first grooves and said second grooves.

81. (New) The power-assisted bicycle of claim 78, wherein said rotation-prevention system comprises a row of grooves formed in an inner wall of said bore and extending in an axial direction, and a row of protruding portions formed on said drive shaft and accommodated within said grooves.

82. (New) The power-assisted bicycle of claim 78, wherein said rotation-prevention system comprises a row of protruding portions formed on an inner wall of said bore and

extending in an axial direction, and a row of grooves formed in said drive shaft and accommodating said grooves.

83. (New) The power-assisted bicycle of claim 64, wherein each of said ratchet pieces has a rigid body and is arranged so as to be operable to pivot about its latitudinal axis through an angle with respect to said engagement face of said piece part.

84. (New) The power-assisted bicycle of claim 54, further comprising a sprocket drive gear engaged with said sprocket for transmitting the assisting power.